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The Childhood Nutrition and Their Problems: The Case Study of an Elementary School in Shkodra City

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Abstract

Body weight is a reliable indicator of nutritional status. The deviation of body weight with 20% over or under the ideal level, places a person at nutritional risk. In recognition of the serious health implication of obesity, current definition of "malnutrition" includes states of over nutrition as well as conditions marked by nutritional deficits. Worldwide, the elderly population is increasingly becoming obese regardless of socio-economic status. Obesity increases the risks for a variety of morbidity conditions. The prevalence in children is also rising at a worrisome rate. Childhood obesity is frequently portrayed as a serious and complex modern-day "epidemic". This has created considerable public health concern due to the association of obesity with the development of several chronic and life threatening physical and psychological health problems. On the other hand the underweight is a big problem in the present day especially in developing countries.The aim of this study is to represent the situation of the childhood nutrition and their problems in an elementary school in Shkodra city. All the children have been part of an anthropometrically measurement (weight, high, waist circumference) and they have fulfilled a short questionnaire of information about their nutrition, physical activity, lifestyle and their parents' education. The questionnaire is done with the support of school directory and helped by their teachers during school year 2012. In this study are involved 200 children from 6 - 14 year old and the data are calculated with SPSS. 20. Programme.

Keywords: *childhood, malnutrition, obesity, underweight, weight.*

1. Introduction

In a world where food supplies are intermittent, the ability to store energy in excess of what is required for immediate use is essential for survival. However, in the presence of nutritional abundance and a sedentary lifestyle, and influenced importantly by genetic endowment, this system increases adipose energy stores and produces adverse health consequences as *Obesity. Obesity* is a state of excess adipose tissue mass. Although often viewed as equivalent to increased body weight, this need not be the case—lean but very muscular individuals may be overweight by arbitrary standards without having increased adiposity. Body weights are distributed continuously in populations, so that a medically meaningful distinction between lean and obese is somewhat arbitrary. Obesity is therefore more effectively defined by assessing its linkage to morbidity or mortality. Although not a direct measure of adiposity, the most widely used method to gauge obesity is the *body mass index* (BMI), which is equal to weight/height^2 (in kg/m^2). Other approaches to quantifying obesity include anthropometry (skin-fold thickness), densitometry (underwater weighing), computed tomography (CT) or magnetic resonance imaging (MRI), and electrical impedance. Based on unequivocal data of substantial morbidity, a BMI of 30 is most commonly used as a threshold for obesity in both men and women. Large-scale epidemiologic studies suggest that all-cause, metabolic, cancer, and cardiovascular morbidity begin to rise (albeit at a slow rate) when BMIs are > 25, suggesting that the cut-off for obesity should be lowered. Some authorities use the term

overweight (rather than obese) to describe individuals with BMIs between 25 and 30. A BMI between 25 and 30 should be viewed as medically significant and worthy of therapeutic intervention, especially in the presence of risk factors that are influenced by adiposity, such as hypertension and glucose intolerance. BMI is used differently for children. It is calculated the same way as for adults, but then compared to typical values for other children of the same age. Instead of set thresholds for underweight and overweight, then, the BMI percentile allows comparison with children of the same sex and age. (Dobbelsteyn. CJ et al. 2001. Pg. 652–660) A BMI that is less than the 5th percentile is considered underweight and above the 95th percentile is considered obese for people 20 and under. People under 20 with a BMI between the 85th and 95th percentile are considered to be overweight.

Table. 1. Body Mass Index (BMI) Percentiles for Age, Boys 6-14 yr

Age (Yr)	5th	10th	25th	50th	75th	85th	90th	95th
6	13.7	14	14.6	15.4	16.4	17	17.5	18.4
7	13.7	14	14.7	15.5	16.6	17.4	18	19.2
8	13.8	14.1	14.8	15.8	17.1	18	18.7	20.1
9	14	14.3	15.1	16.2	17.6	18.6	19.5	21.1
10	14.2	14.6	15.5	16.6	18.2	19.4	20.3	22.2
11	14.6	15	15.9	17.2	18.9	20.2	21.2	23.2
12	15	15.5	16.4	17.8	19.7	21	22.1	24.2
13	15.5	16	17	18.5	20.4	21.9	23	25.2
14	16	16.5	17.6	19.2	21.2	22.7	23.8	26

Table. 2. Body Mass Index (BMI) Percentiles for Age, Girls 6–14 yr

Age (Yr)	5th	10th	25th	50th	75th	85th	90th	95th
6	13.4	13.7	14.4	15.2	16.3	17.1	17.7	18.8
7	13.4	13.8	14.5	15.5	16.7	17.6	18.3	19.7
8	13.5	13.9	14.7	15.8	17.3	18.3	19.2	20.7
9	13.7	14.2	15.1	16.3	18	19.1	20.1	21.8
10	14	14.5	15.5	16.9	18.7	20	21	23
11	14.4	14.9	16	17.5	19.5	20.9	22	24.1
12	14.8	15.4	16.5	18.1	20.2	21.7	23	25.3
13	15.3	15.9	17.1	18.7	21	22.6	23.9	26.3
14	15.8	16.4	17.6	19.4	21.7	23.3	24.7	27.3

The distribution of adipose tissue in different anatomic depots also has substantial implications for morbidity. Specifically, intra abdominal and abdominal subcutaneous fat has more significance than subcutaneous fat present in the buttocks and lower extremities. This distinction is most easily made by determining the waist-to-hip ratio, with a ratio >0.9 in women and >1.0 in men being abnormal. Research shows that people with "apple-shaped" bodies (with more weight around the waist) face more health risks than those with "pear-shaped" bodies who carry more weight around the hips. The WHR has been used as an indicator or measure of the health of a person, and the risk of developing serious health conditions. Research shows that people with "apple-shaped" bodies (with more weight around the waist) face more health risks than those with "pear-shaped" bodies who carry more weight around the hips.

Table.3. Waist-to-hip ratio (WHR) according to the gender

Male	Female	Health risk
0.7	0.8	Lower risk
0.7 to 1.0	0.8 to 0.85	Moderate risk
1.0+	0.85+	High risk

WHR is used as a measurement of obesity which in turn is a possible indicator of other more serious health conditions. WHO STEPS states that abdominal obesity is defined as a waist–hip ratio above 0.90 for males and above 0.85 for

females, or a (BMI) above 30.0. The National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) states that women with waist–hip ratios of more than 0.8, and men with more than 1.0, are at increased health risk because of their fat distribution. WHR has been found to be a more efficient predictor of mortality in older people than waist circumference or BMI (Price GM, et al 2006. Pg 449–460). If obesity is redefined using WHR instead of BMI, the proportion of people categorized as at risk of heart attack worldwide increases threefold. (Yusuf S, et al 2005. Pg 1640–9). The body fat percentage is considered to be an even more accurate measure of relative weight. Of these three measurements, only the waist–hip ratio takes account of the differences in body structure. Hence, it is possible for two women to have vastly different body mass indices but the same waist–hip ratio, or to have the same body mass index but vastly different waist–hip ratios. Even in ancient civilizations globally, female representations are most often in the 0.6-0.7 range for WHR, suggesting a preference towards lower WHR. (Singh. D, et al 2002. Pg. 81–91) WHR have been shown to be a better predictor of cardiovascular disease than waist circumference and body-mass index. (Mørkedal, B 2011, pg. 457–461) However, other studies have found that waist circumference, not WHR, to be a good indicator of cardiovascular risk factors, (Dobbelsteyn. CJ et al. 2001. Pg. 652–660) body fat distribution (Ketel IJ et al. 2007. Pg. 655–661) and hypertension in type 2 diabetes. (Picon PX et al. 2007. Pg 443–449) Many of the most important complications of obesity, such as insulin resistance, diabetes, hypertension, and hyperlipidemia, and hyperandrogenism in women, are linked more strongly to intraabdominal and/or upper body fat than to overall adiposity.

2. Methodology

The aim of this study is to represent the situation of the childhood nutrition and their problems in an elementary school in Shkodra city. In this study are involved 200 children from 6 - 14 year old in an elementary public school. All the children have been part of an anthropometrically measurement (weight, high, waist circumference) and they have fulfilled a short questionnaire of information about their nutrition, physical activity, lifestyle and their parents' education. The questionnaire is done with the support of school directory and helped by their teachers during school year 2012. In this study we have calculated the health indicators such as Body Mass Index of children and Waist-to-Hip Ratio (WHR) and the data are calculated with SPSS. 20. Programme.

3. Results of the study

The last years of developements in Albania, influenced the social and economical system, but these changes reflected on school too. The rapid everyday life influenced also in the children`s nutrition. The children have more options to choose their food. They don`t get yet their food only at home, but also at the front door of the school, the fast foods on the road, the school canteens etc. Between all these options, they mostley like the fast foods. The parents on the other hand have no time to cook for them or to fullfill their wishes and some times they have to cook or buy food according to the children`s requests. To highlight these changes in children`s nutrition attitudes and the effects in their future life style, we have include 200 children of an elementary school, from 6-14 years old, 55% of them were male and 45% female. All age groups were almost spread at the same percentage. (see figure 1.)

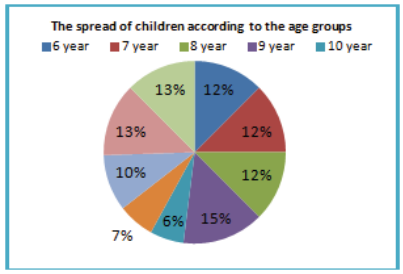

Figure. 1. Spread of children according to the age groups

According to the answers, children refer that they consume different foods such as: fast food, french fries, deserts. We can see that 79% of them consume fast food (figure 2) and 13% of them admit that they consume these foods every day. (figure 3).

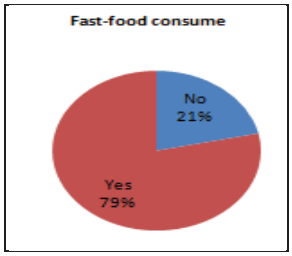

Figure 2. Fast food consume

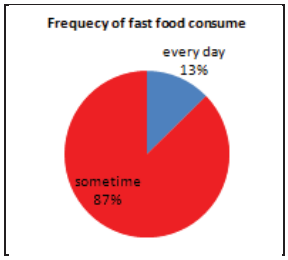

Figure.3. Frequency of fast food consume

As we can see on figure 4, 91% of children consume deserts and 15% of them admit that they consume deserts every day. (figure 5)

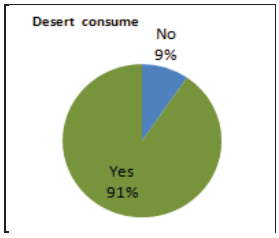

Figure. 4. Desert consume

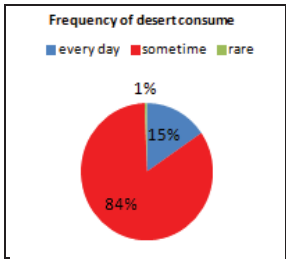

Figure. 5. Frequency of desert consume

The children prefer to eat: pizza, hamburgers, hot-dogs, sandwiches, french fries and to drink: coca-cola, sprite, concentrated juice instead of natural juices homemade. But this situation is created with the "support" of the parents, too. They give money to their children, without influencing on the manner they have to spent it. So the children have their own

free choices how to spend their money. This is the reason why we see fast foods always full of work and children almost every day with these products in their hands. So we can see (figure 6 and 7) that 86% of children consume french-fries and 34% of them admit that they consume these products every day.

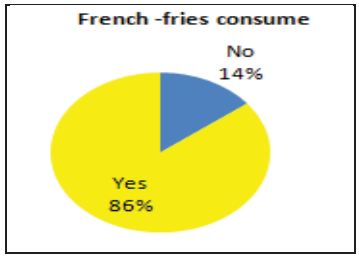

Figure 6. French-fries consume

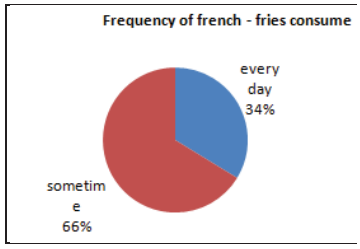

Figure 7. Frequency of French-fries consume

As a result, the children influenced by the situation (parent`s money) and stimulated by each others eat these kinds of junk food. In this point of view the children refuse to taste and eat healthy food as: vegetables, fruits, meat, milk, fish and food prepared at home. So the children are out of their parents controle and they can choose an unhealthy life style directed toward smoking, alcooholic drinks, drugs etc.

So we can see at figure 8, that the most part of parents have only the high school education. Their level of education influences on their children`s life style, not only on their feeding, but also on the knowledge about feeding, the physical activity and their future health problems.

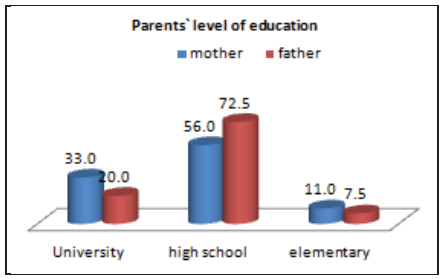

Figure 7. Parent`s level of education

Efforts to create a health-conducive environment should also include food vendors that may be present on or near the school premises. In many countries there is a high concentration of fast-food restaurants near schools and a relatively low concentration of stores that sell fruits and vegetables. It is a fact that in the nonpublic schools in Shkodra, there are small shops that offer different cookies, candies chocolates, fast- food, french fries ect, inside the school. So these places stimulate this kind of feeding. On the other hand the public schools generaly offer these products at the front door of the school. There exists a correlation between the consume of french –fries, fast food and deserts. So the same children are predisposed to consume all these products and they don`t select the healthy ones.

Table 4. The correlation between the different products

		French fries consume	Deserts consume	Fast-food consume
French fries consume	Pearson Correlation	1	.302**	.234**
	Sig. (2-tailed)		.000	.001
	N	200	200	200
Cookies consume	Pearson Correlation	.302**	1	.412**
	Sig. (2-tailed)	.000		.000
	N	200	200	200
Fast-food consume	Pearson Correlation	.234**	.412**	1
	Sig. (2-tailed)	.001	.000	
	N	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

Another problem is the time spent in front of TV or computer and for the home work by the children. The most part of children (51% 2 hours per day, figure 9) lose their time in front of the TV and with homework (65% of them spent 3 hours every day, figure 10).

Table 5. The correlation between the age and consume of different products.

		Age	Desert consume	Fast-food consume	French fries consume
Age	Pearson Correlation	1	.181*	.202**	.202**
	Sig. (2-tailed)		.010	.004	.004
	N	200	200	200	200
Desert consume	Pearson Correlation	.181*	1	.412**	.302**
	Sig. (2-tailed)	.010		.000	.000
	N	200	200	200	200
Fast-food consume	Pearson Correlation	.202**	.412**	1	.234**
	Sig. (2-tailed)	.004	.000		.001
	N	200	200	200	200
French fries consume	Pearson Correlation	.202**	.302**	.234**	1
	Sig. (2-tailed)	.004	.000	.001	
	N	200	200	200	200

*. Correlation is significant at the 0.05 level (2-tailed),
**. Correlation is significant at the 0.01 level (2-tailed).

In this table we see that exists a strong correlation between the consume of these products with the age of children. So the elder ages tend to consume more than the younger ones.

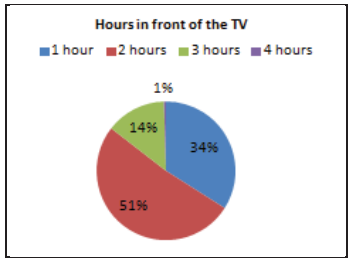

Figure 9. Hours in front of the TV

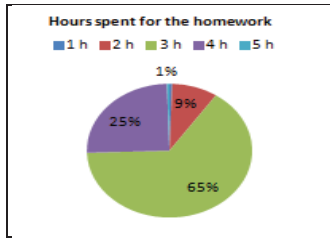

Figure 10. Hours spent for homework

Physical education classes offered by schools often do not meet the recommended levels of physical activity for children and adolescents (WHO 2006 b). Walking and cycling to and from school presents a great opportunity for children and adolescents to be physically active on a regular basis (WHO 2006 b). So in figure 11 we can see that 51% of children don't practice any sport and only 25% of them admit that they do it regularly, every day (figure 12).

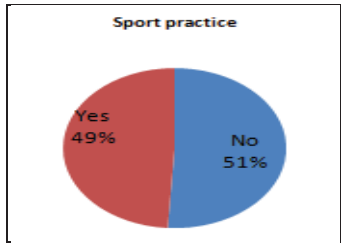

Figure 11. Sport practice

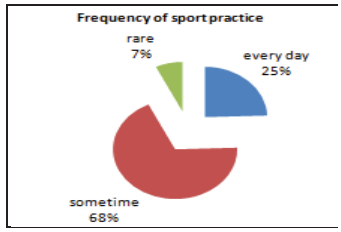

Figure 12. Frequency of sport practice

In table 6 and 7 we can see that the sportive activity is related to the parents` level of education and especially with mother`s, where the correlation is significant at the 0.01 level (2-tailed). On the other hand the father`s level of education has a correlation significant at the 0.05 level (2-tailed). Also we see at the table 8 that exists a strong correlation that is significant at the 0.01 level (2-tailed) between the age of the child and the sport practice.

Table 6. The correlation between father level of education and sport practice

		Father level education	Practice the sport
Father level education	Pearson Correlation	1	-.152*
	Sig. (2-tailed)		.031
	N	200	200
Practice the sport	Pearson Correlation	-.152*	1
	Sig. (2-tailed)	.031	
	N	200	200

*. Correlation is significant at the 0.05 level (2-tailed).

Table 7. The correlation between mother level of education and sport practice

		Practice the sport	Mother level education
Practice the sport	Pearson Correlation	1	-.215**
	Sig. (2-tailed)		.002
	N	200	200
Mother level education	Pearson Correlation	-.215**	1
	Sig. (2-tailed)	.002	
	N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8. The correlation between age and sport practice.

			Age	Sport practice
Spearman's rho	Age	Correlation Coefficient	1.000	.284**
		Sig. (2-tailed)		.000
		N	200	200
	Sport practice	Correlation Coefficient	.284**	1.000
		Sig. (2-tailed)	.000	
		N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

Based on what children consume and prefer to consume and on the other hand the physical activity they practice, we tried to describe their level of nutrition, based in BMI calculation. In figure 13 is represented the level of nutrition based in BMI calculated and classified for children according to gender, based on tables 1 and 2. It was found that 63% of children have a normal weight, 12.5% underweight, 10% overweight and 14.5 % are obese. In table 9 is represented the correlation that exists between the level of nutrition and BMI of children and this correlation is significant at the 0.01 level (2-tailed), also for the Albanian children.

Table 9. The correlation between nutrition level and BMI

		Nutrition level	BMI
Nutrition level	Pearson Correlation	1	.757**
	Sig. (2-tailed)		.000
	N	200	200
BMI	Pearson Correlation	.757**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

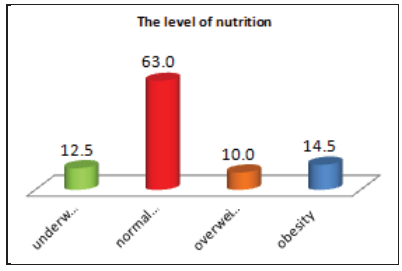

Figure 13. The level of nutrition

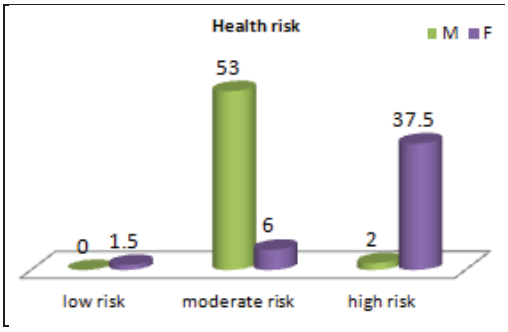

Figure 14. Health risk according to the sex

We have calculated also the health risk based in the WHR based in the table according to gender and we conclude that 53% of male are exposed to a moderate level risk and 37.5% of female are exposed to a high level risk (figure 14).

Table 10. Correlation between health risk and sex.

		Age	Health Risk	Sex
Age	Pearson Correlation	1	-.108	.131
	Sig. (2-tailed)		.128	.065
	N	200	200	200
Health Risk	Pearson Correlation	-.108	1	**.737****
	Sig. (2-tailed)	.128		.000
	N	200	200	200
Sex	Pearson Correlation	.131	**.737****	1
	Sig. (2-tailed)	.065	.000	
	N	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

This correlation is significant between health risk and sex of children. That means that females are more risky than male. (table 10)

Table 11. Correlations between health risk and WHR

		WHR	Health Risk
WHR	Pearson Correlation	1	.343**
	Sig. (2-tailed)		.000
	N	200	200
Health Risk	Pearson Correlation	.343**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

Table 12. Correlations between age and WHR

		WHR	Age
WHR	Pearson Correlation	1	-.519**
	Sig. (2-tailed)		.000
	N	200	200
Age	Pearson Correlation	-.519**	1
	Sig. (2-tailed)	.000	
	N	200	200

4. Discussion

A nutritious diet should meet the nutrient and energy needs of students and be based on a variety of foods originating mainly from plant-based sources. A variety of vegetables, fruits, whole cereals, bread, grains, pasta, rice or potatoes should be eaten, preferably fresh (for fruit and vegetables) and locally produced, several times a day. Fat intake should be limited to not more than 30% of daily energy and most saturated fats should be replaced with unsaturated fats. Trans-fatty acids should be avoided. The consumption of sugar and salt should be limited, while ensuring that all salt used is iodized. Sugary drinks and sweets should only be used with limited frequency, and refined sugar used sparingly. Fish and low-fat meat should be served for preference. Food should be prepared in a safe, hygienic and healthy way. Steaming, baking, boiling or microwaving helps to reduce the amount of added fat. (WHO 2006 a). School vending machines and school snack bars have been criticized for providing easy access to energy-dense, micronutrient-poor foods and beverages. In many schools, revenues from snack bars and vending machines are important sources of income for the school management. Foods and beverages provided in snack bars or vending machines should be consistent with nutritional standards for school foods and beverages or with the national dietary guidelines for school-aged children. In order to keep the source of revenue, policy-makers may encourage schools to replace energy-dense, micronutrient-poor products with milk, yogurts without added sugar, water, fruit juices without added sugar, sandwiches, fruits, nuts or vegetables. All of these may be good options to include in the range of products available in schools.

Also possible obstacles for involving parents include lack of awareness of the importance of eating and physical activity behaviors; resistance to teachers or governments being involved with diet and physical activity practices in the household environment and therefore perceived as private; a misperception that time and attention given to healthy diets and physical activity may withdraw attention from more important subjects or may negatively impact academic standards/scores; lack of time and financial resources.

Extracurricular activities can help to supplement physical activity obtained in formal physical education classes. Extracurricular activities include any form of activity provided by schools other than formal classes, such as: comprehensive programmes of after-school gatherings offering physical activity opportunities, both competitive and non-competitive; active recess, morning, lunch or after-lunch exercises, traditional dances, etc; school sports competitions.

5. Conclusions

Based on our study in an elementary school, we can see that the future of our population will face the obesity problems as the wide world too. We concluded that 63% of children have a normal weight, 12.5% underweight, 10% overweight and 14.5 % are obese. In our city we found that exists also the malnutrition that is related also with the level of parents` health education.

Females are more risky than males because 53% of male are exposed at a moderate level risk and 37.5% of females are exposed at a high level risk, because the children prefere to eat pizza, hamburgers, hot-dogs, sandwiches, french fries. This situation is created with the “support” of the parents too. They give money to their children, without influencing on the manner they have to spent it. So the children have their own free choices how to spend their money. They prefere more fast-foods, deserts and other unhealthy food, wich is influenced by the presence of shops inside and at the front door of the schools. The children don`t have the regular physical activity in and out of school and this is related to the parents` level of education, specially to mother`s education. Also they have a sedentary life related to the time they spend in front of TV or computers and doing their homework.

6. Recommendations

Health promotion of school personnel is important because teachers and other staff need to be aware and responsible for the messages they give as models to students and others. Furthermore, evidence suggests that promoting the health of school staff by encouraging physical activity and healthy diet may improve staff productivity and mood, and reduce medical/insurance expenses. But a school's facilities are a key factor if the implementation of physical activity policies is to be successful. These include the school building, the classrooms, recreation and sport facilities and the surroundings in which the school is situated. By improving the physical facilities in schools, policy-makers will encourage students to spend their recess time more actively. School health services help foster health and well-being as well as monitor, prevent, reduce, treat and refer important health problems or conditions of students and staff of the school (WHO 2006 b). School health services can consist of a teacher designated to be responsible for healthy diet and physical activity

monitoring, a trained school nurse or a school health team that includes a nutritionist or a diet/nutrition specialist. Although not all governments can provide health services in schools, where resources are available the following services may be considered (WHO 1998, WHO 2006 b). Children need to be educated related to the knowledge of being selective about the food that they choose to eat. For this reason the younger children have to be under strict rules, especialy about the hand washing before they eat. But all this is related with the parent`s level of education. Parents and other caregivers play an important role in a child's life as nurturers, teachers, disciplinarians, role models and supervisors. They control most of the food choices at home and their support positively influences physical activity among children and adolescents.

Is very important to do regular measurement of body weight and height of students with a feedback system to parents. Schools that initiate BMI measurement programmes should adhere to safeguards to reduce the risk of harming students, have in place a safe and supportive environment for students of all body sizes, and implement strategies to promote physical activity and healthy eating. We can refer to other school services and community health services based on results of the screening. The recommendations about physical activity for all students, including those with disabilities, and their parents is another important point of health education. Health education consist also in counseling of students and their parents to promote healthy eating and appropriate levels of physical activity. In addition to providing these regular health services, health professionals may also be involved in research, monitoring and evaluation, education and advocacy. Health professionals can play a significant role in promoting healthy diets and physical activity in schools. Nurses, nutritionists, doctors, counselors, and staff can help children to eat healthily and participate in appropriate levels of physical activity

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